REMARKS/ARGUMENTS

1. Claims

Claims 1-2, 5-7, 9-22, 24-28, 30-34 and 36-38 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of any foregoing amendments and the following remarks.

2. Claim Rejections – 35 U.S.C. § 103 (a)

Claims 1, 2, 5-7, 9-17, 19-22, 24-28, 30-34, and 36-38 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Purcell et al (5,598,514) and Claim 18 remains rejected over Purcell in view of Nishino et al (5,237,424). In the Final Office Action, the Examiner states that Applicant's recent arguments were not persuasive. For example, the Examiner states: "Applicant asserts on page 9 of the Remarks that Purcell et al fails to disclose the 4:2:0 format. However, lines 35-55 in col. 1 of Purcell et al discloses the concept of such common coding format under the MPEG standard." Applicant maintains its earlier argument as supplemented below.

Applicant previously argued that Purcell does not describe an "interleaved YCbCr 4:2:0", but rather 4:2:2, which is conventionally known. In YCbCr 4:2:0, there are twice as many luminance samples as total number of chrominance samples in the two chrominance components. In a 4:2:2 format, the number of luminance samples is equal to the sum of the number of samples in the two chrominance components. In Figure 6B of Purcell there are 16 luminance samples (Y) and 8 + 8 chrominance samples (U and V) which means that the sub sampling format is 4:2:2. Hence, Purcell does not disclose an interleaved YCbCr 4:2:0.

Lines 35-55 of Purcell provides:

> Under the MPEG standard, the picture is divided into a matrix of "Macroblock slices" (MBS), each MBS containing a number of picture areas (called "macroblocks") each covering an area of 16x16 pixels. Each of these picture areas is further represented by one or more 8x8 matrices

> which elements are the spatial luminance and chrominance values. In one representation (4:2:2) of the macroblock, a luminance value (Y type) is provided for every pixel in the l6x16-pixel picture area (Le. in four 8x8 "Y" matrices), and chrominance values of the U and V (i.e., blue and red chrominance) types, each covering the same 16x16 picture area, are respectively provided in two 8x8 "U" and two 8x8 "V" matrices. That is, each 8x8 U or V matrix has a lower resolution than its luminance counterpart and covers an area of 8x16 pixels. In another representation (4:2:0), a luminance value is provided for every pixel in the 16x16 pixels picture area, and one 8x8 matrix for each of the U and V types is provided to represent the chrominance values of the 16x16-pixel picture area. A group of four contiguous pixels in a 2x2 configuration is called a "quad pixel"; hence, the macroblock can also be thought of as comprising 64 quad pixels in an 8x8 configuration.

Purcell explains the two sub-sampling formats YCbCr/YUV 4:2:0 and YCbCr/YUV 4:2:2 in the context of a description of the prior art. Applicant does not claim to have invented any of those color formats. However, the concept of storing YUV 4:2:0 in an interleaved format is central to the present invention and Purcell fails to disclose or suggest storing YUV 4:2:0 in an interleaved format. The standard way of storing YUV4:2:2 is in an interleaved format so it is not surprising that Purcell in his examples in the drawings shows the pixels in 4:2:2 format interleaved. This does not mean that a skilled video engineer automatically would store YUV 4:2:0 video interleaved after reading the Purcell patent. The obvious and most practical way of implementing Purcell's invention for YUV 4:2:0 would be to keep the luminance and the chrominance blocks separate and not interleaved. Another difference is that Purcell discusses block and pixel interleaved order (column 10; lines 33-44) and the translation between the two formats. In the present invention, the data row (or scan line) is arranged interleaved. A complete scan line of luminance data is followed by a complete scan line of chrominance data. The lines with chrominance data are also interleaved. Following a first line of Y data there is a first line of Cb data. After that, there is a second line of Y data followed by a first line of Cr data. For example:

Y0 Y1 Y2 Y3 Y4 Y5 Y6 Y7 Cb0 Cb2 Cb4 Cb6
Y8 Y9 Y10 Y11 Y12 Y13 Y14 Y15 Cr0 Cr2 Cr4 Cr6
Y16 Y17 Y18 Y19 Y20 Y21 Y22 Y23 Cb16 Cb18 Cb20 Cb22
Y24 Y25 Y26 Y27 Y28 Y29 Y30 Y31 Cr16 Cr10 Cr20 Cr22

In the example above Cb2 and Cr2 provides chrominance information for four pixels Y2, Y3, Y11, and Y12. Hence, it is clear that the present invention is distinguishable from Purcell.

The Examiner further states: "Applicant also asserts on page 9 of the Remarks that Nishino et al fails to disclose interleaving samples but interleaving of blocks. Perhaps there is a misunderstanding of the Applicant's position. The Applicant is stating (as the Examiner acknowledges) that Nishino discloses interleaving of blocks, whereas the present invention discloses interleaving of samples. Hence, Nishino does not overcome the deficiency of Purcell. The MB referred to by the Examiner as a memory block is actually referred to in Nishino as follows: A unit of the four blocks is called a macro-block (MB) (see col. 3, line 51 of Nishino). Second, the sub sampling format that is interleaved is, like Purcell, 4:2:2. Referring to Nishino, in Fig 4a signal B, it can be clearly seen that the number of luminance blocks (Y) are equal to the sum of the two chrominance block types (C1 and C2). Nishino does not disclose interleaving of samples.

The Examiner further states: "Applicant further asserts that the references are not combinable as Nishino describes storage of video data on a magnetic tape. However, lines 12-34 in col. 1 of Purcell et al also discloses magnetic disks and tapes as common storage media for MPEG playback modes." However, it is impermissible within the framework of 35 U.S.C. 103(a) to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to of skilled in the art. *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 230 U.S.P.Q. 416 (Fed. Cir. 1986).

The Applicant argued:

> Further, even assuming that Purcell discloses YCbCr 4:2:0, which it does not, Purcell is not technically combinable with Nishino as the technology described in Nishino relates to the storage of video data on a magnetic tape using a rotary head type digital VTR, similar to what is used in digital DV camcorders. Nishino discusses storage techniques that are wholly inapplicable to the internal storage of video frames within a video encoder or video decoder as in Purcell.

Lines 12-34 of col. 1 of Purcell provides:

> The Motion Picture Experts Group (MPEG) is an international committee charged with providing a standard (hereinbelow "MPEG standard") for achieving compatibility between image compression and decompression equipment. This standard specifies both the coded digital representation of video signal for the storage media, and the method for decoding. The representation supports normal speed playback, as well as other playback modes of color motion pictures, and reproduction of still pictures. The MPEG standard covers the common 525- and 625-line television, personal computer and workstation display formats. The MPEG standard is intended for equipment supporting continuous transfer rate of up to 1.5 Mbits per second, such as compact disks, digital audio tapes, or magnetic hard disks. The MPEG standard is intended to support picture frames of approximately 288x352 pixels each at a rate between 24 Hz and 30 Hz. A publication by MPEG entitled "Coding for Moving Pictures and Associated Audio for digital storage medium at 1.5 Mbit/s," included herein as Appendix A, provides in draft form the proposed MPEG standard, which is hereby incorporated by reference in its entirety to provide detailed information about the MPEG standard.

Applicant's prior argument was that Purcell and Nishino do not both describe *storage of video frames within a video encoder or video decoder,* and hence do not describe compatible technologies that can be combined to obtain the present invention. Hence, Purcell and Nishino cannot be combined to obtain the present invention. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references

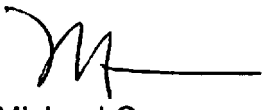
are not sufficient to render the claims prima facie obvious (See *In re Ratti,* 270 F.2d 810, 123 USPQ 349 (CCPA 1959)). In re Ratti, the court reversed the rejection of a patent application holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352).

CONCLUSION

In view of the foregoing remarks, the Applicant believes all of the claims currently pending in the Application to be in a condition for allowance. The Applicant, therefore, respectfully requests that the Examiner withdraw all rejections and issue a Notice of Allowance for all pending claims.

The Applicant requests a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,



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